(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 28 July 2005 (28.07.2005)

PCT

(10) International Publication Number WO 2005/068803 A1

- (51) International Patent Classification⁷: F02B 37/007, 37/013. F01L 9/02, 9/04, F02D 13/02, F02B 29/04, 37/04, 37/11, 39/10, 33/32, 37/18, 37/16
- (21) International Application Number:

PCT/GB2005/000120

- (22) International Filing Date: 14 January 2005 (14.01.2005)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0400808.2 0400794.4 14 January 2004 (14.01.2004) GB

14 January 2004 (14.01.2004) GB

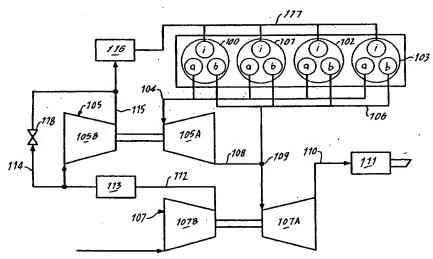
- (71) Applicant (for all designated States except US): LOTUS CARS LIMITED [GB/GB]; Hethel, Norwich, Norfolk NR14 8EZ (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): TURNER, James,

William, Griffith [GB/GB]; 11 Herb Robert Glade, Wymondham, Norfolk NR18 OXS (GB).

- (74) Agents: PLUCKROSE, Anthony, William et al., Boult Wade Tennant, Verulam Gardens, 70 Gray's Inn Road, London WC1X 8BT (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

[Continued on next page]

(54) Title: A TURBOCHARGED INTERNAL COMBUSTION ENGINE



(57) Abstract: A turbocharged internal combustion engine comprising: a turbocharger (15) actuators for opening and closing the exhaust valves (a, b) and an electronic controller which controls operation of the actuators to thereby control opening and closing of the exhaust valves (a, b). The exhaust valves comprise a first exhaust valve (a) connected to a first exhaust duct (14) and a second exhaust valve (16) connected to a second exhaust duct (16). The first exhaust duct (14) is connected to the turbocharger (15) so that exhaust gases passing through the first exhaust duct (14) drive the turbocharger (15). The second exhaust duct (16) bypasses the turbocharger (15) and the combusted gases flowing through the second exhaust duci are exhausted without passing through the turbocharger (15). The electronic controller by controlling the opening and closing of the first (a) and second (b) exhaust valves controls what proportion of the combusted gases leaving the combustion chamber flow through each of the first (14) and second (16) exhaust ducts.

05/068803 A1

SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ME, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT.

BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR). OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.